Microbiology Case 68 (Skin, Wound, Multisystem Infections)

**Strep pyogenes (Group A Strep, necrotizing fasciitis) Common cause in normal immune system**

* Signs and Symptoms: severe pain and swelling that progressed rapidly after a minor injury; production of a fever; pain so severe that the infected area cannot be moved; redness at the site of injury that can turn grey in color
* Source: common bacteria introduced through a break in the skin
* Manner of exposure, route, residual tissues, transmittance: humans are the only habitat, and direct contact with patients or carriers is the major mode of transmission; resides on normal skin;
* Pathology: enters via wounds or other breaks in the integrity of the epidermis; has great ability to adhere to the epithelial cells of the mucosa at the site of the wound; multiplies in tissues and resists phagocytosis by using M-proteins, which interfere with the alternative compliment pathway to and opsinization; may spread rapidly in the sub-q tissue and the dermis and fascia; spread occurs when GABHS rapidly advance into the deeper layers of the skin owing to hyaluronidase and other hydrolytic enzymes; cytotoxins damage host cell membranes; can invade blood to cause bacteremia
* How to Identify: gram stain and cultures of wound aspirate; blood cultures; gram+ cocci that grow in chains in body fluid; beta-hemolysis; catalase negative; bacitracin sensitive; specific M proteins
* Resistance: none
* Susceptibility: common worldwide
* Other DDx: anaerobic infection like C. perfringes; gram-negative bacteria such as vibrio; staph aureus; strep pyogenes
* Prevention, Treatment, Vaccine Design: **organism is highly susceptible to penicillin G, or erythromycin or clindamycin for those with penicillin allergies**; cases such as this one are not able to be prevented; infections in the hospital result from organisms carried to the patient or from other patients, so infection-control measures such as hand washing and gloving should be followed